

REMARKS

Applicants have carefully considered the Office Action dated March 20, 2006, and the references cited therein. Applicants file this amendment in a sincere effort to place the application in condition for allowance. Accordingly, reconsideration is respectfully requested.

Applicants have added new Claim 13, therefore, Claims 1-13 are presented for consideration.

In the Office Action, Claims 1-12 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Specifically, the Office Action states that the “claims fail to recite elements and their inter-relationship to define a device having a first and second ‘vacuum’ nozzle unit 2, 3 controlled by a valve 27 to control vacuum in a space (vacuum cup) 24.” The Office Action further states that unit 3 is continuously supplied by vacuum, and that unit 2 is controlled by the valve 27.

Applicants respectfully traverse the § 112 rejection of the claims. Claim 1 defines a shut off valve which is provided on a principal supply duct. The valves prevents the flow of the pressure medium supply there through, thereby interrupting the pressure medium supply to the principal suction nozzle unit. The addition suction nozzle unit is defined in Claim 1 as being continuously supplied during operation of the device with this pressure medium. Therefore, Claim 1 does not define the valve as controlling the suction nozzle unit 3. Accordingly, Applicants respectfully submit that Claim 1 complies with section 112, second paragraph.

Claims 1-12 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese abstract 61055400 (“400 reference”). Applicants respectfully note that the Office Action cites the prior art reference EPO 0540488 A1. However, upon review the specifics of

the rejection, and conferring with the Examiner, the intended cited reference is Japanese abstract 61055400.

The Office Action contends that the '400 reference discloses a vacuum producing device with a shut off valve 60, a principal vacuum unit 22 and 24 and an additional vacuum unit 42 in constant communication with a source 20.

In the '400 reference the valve 60 controls the air flow to the principal and additional vacuum units. The vacuum units are in communication with a vacuum take out pipe 56. This pipe is also in communication with the valve 60, which is actuated by vacuum. It appears from the reference that as a certain vacuum level is reached, the valve will block off air to vacuum unit 24. The valve 60 includes an inlet duct 58 and two outlet duct 58a and 58b. When the valve spool 64 is actuated by vacuum from duct 72, fluid flow through the valve to duct 58b is interrupted. However, fluid flowing through duct 58a continues unimpeded. Accordingly, there will be considerable air flow through the valve and through the vacuum unit 42 at all times.

Applicants have amended Claim 1 to further define the invention and respectfully submit that Claim 1, as amended, patentably distinguishes over the references of record.

Claim 1, as amended, defines a vacuum producing device having a principal suction nozzle unit which is supplied with a pressure medium. A shut off valve is provided on a principal supply duct and is actuatable in accordance with negative pressure which is obtained in a space to be evacuated. The shut off valve prevents the flow of the pressure medium supply through the valve, thereby interrupting the pressure medium supply to the principal suction nozzle unit when a predetermined target negative pressure is reached. The claim further defines an addition unit which is constantly supplied during the operation of the device with pressure medium.

In the present invention, when the vacuum producing device is actuated, maximum vacuum flow is desired in order to allow the unit to connect with an object and evacuate the space. Once the space is evacuated, only a reduced vacuum flow is needed in order to address any vacuum leaks which may be occurring in the space. In order to achieve the two levels of operation, when a predetermined negative pressure is reached, the shut off valve will shift, interrupting the flow of the pressure medium through the valve. Therefore, pressure medium will only flow through the additional unit which is not controlled by the shut off valve. The uninterrupted flow through the additional unit also ensures that the additional unit will create sufficient vacuum for causing the shut off valve to be completely closed even as the shut off valve is being closed. However, the flow the additional unit is relatively small. The ability of the shut off valve to interrupt the flow therethrough prevents a waste of the pressure medium and provides a vacuum unit that is economical to operate.

This feature is not present in the '400 Japanese reference. In the Japanese reference, when a predetermined vacuum level is reached, adjusting valve 60 obstructs one path through which pressure medium may flow, but still permits the flow of pressure medium through the valve along another path. Specifically, when the valve 60 has shut off the connection between supply ducts 58 and duct 58b, there still remains a connection between supply duct 58 and duct 58a, which feeds the principal vacuum unit 22. Fluid is also supplied to additional vacuum unit 42, the outflow of which is connected to the vacuum duct of the vacuum unit 22. This may provide a vacuum boost, but also results in a large consumption of fluid. Accordingly, the remaining uninterrupted flow paths would lead to a very large consumption of pressurized fluid flowing through the vacuum units, even after the predetermined vacuum level is reached. This is contrary to the economizing design of the present invention as defined in Claim 1.

Accordingly, Applicants respectfully submit that amended Claim 1, and those claims depending therefrom, patently distinguish over the references of record.

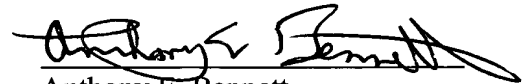
Applicants have added new Claim 13 which depends from Claim 1. Claim 13 further distinguishes the claimed invention over the references of record. Claim 13 defines the outflow ducts of the principal and additional suction nozzle units as being directly connected to atmosphere. In contrast, in the '400 reference, the additional vacuum unit 42 has an outflow duct 52 which is connected to the vacuum duct 32 of the principal vacuum unit 22. This manner of connection may help to amplify the vacuum effect of the additional unit 42 and increase the fluid flow. However, this increased fluid flow still occurs even after the vacuum in the outtake pipe has reached a predetermined level and valve 60 has been actuated. Therefore, a considerable amount of fluid is expended even after the valve has shifted.

In the present invention, when the shut off valve is closed, the only flow is through the additional suction nozzle unit which is maintained at a low level. The additional suction nozzle has an outflow duct which connects directly to atmosphere. There is no positive suctioning at the outflow duct of the additional unit as in the '400 reference. Therefore, the pressurized medium is used efficiently. Accordingly, Applicants respectfully submit that Claim 13 defines over the references of record.

As a result of the amendments and remarks set forth above, Applicants respectfully request favorable reconsideration of Claims 1-12, favorable consideration of new Claim 13, and allowance of the Application with the Claims 1-13.

If the Examiner believes that a telephone interview would be helpful in moving this case toward allowance, he is respectfully invited to contact Applicants' attorney at the number set forth below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Anthony E. Bennett", written over a horizontal line.

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